International Harmonised Research Activities
Vehicle Compatibility Working Group

Minutes of the Second meeting, held at DETR on 1 October 1997

present:	K Rodgers	Chairman
	C A Hobbs	Secretary
	E Faerber	EEVC
	J Bloch	EEVC
	T Hollowell	USA
	K Oki	Japan
	G Neat	USA - observing

Apologies for absence were received from Mr Welbourne and Mr Seyer.

IHRA Frontal Impact

Mr Hollowell and Mr Hobbs provided a summary of the IHRA meeting on frontal impact. The US have a particular interest in the use of the small female dummy and are working on a test using a mobile deformable barrier (MDB), approaching at an oblique angle. They are simulating two cars moving by an MDB moving a double speed impacting a stationary car. In Europe there is a recognised need for a requirement to protect the feet and ankles and there is a growing concern in Canada for a requirement to protect the upper limbs.

The impact test speed, used in European legislation, is being reviewed and this review will need to take account of compatibility requirements. There is also a concern over the effects of the deceleration pulse on airbag triggering. Canada would like to see separate requirements, one with a hard deceleration pulse and one with a soft pulse. For Europe, there is a need to consider extending offset testing to N1 and M1 (2½ to 3½ tonne) vehicles.

It is NHTSA's view that the Insurance Institute for Highway Safety (IIHS) tests have shown that, based on dummy response alone, only the lower limbs are likely to require significant improvement. There is also concern about neck injuries caused by airbags to small or out of position occupants. FMVSS 208 was changed in March 1997 to allow de-powered airbags. This change is only valid until 2001, by when a more complete solution is required.

Status of Current Activities and Future Plans

USA

Mr Hollowell explained the US work plan which includes MDB v car testing and simulation modelling. He distributed documents which described the modelling work (Docs 5, 6 & 7).

EEVC

Mr Faerber explained that a contract had been signed with the European Commission for a collaborative programme in Europe. This work will cover accident analyses, testing and modelling work. The programme started in July 1997 and runs for two years.

BASt

BASt have carried out the car to car impact work that formed part of the EC funded work

carried out by FIA/AIT with ADAC. In this programme, three large cars: Mercedes Benz E Class, BMW 5 Series and Volvo S70 were impacted against a small car: Ford Ka or Citroen Saxo. The results of these tests are being compared with data from Offset Deformable Barrier (ODB) tests, using the ADAC barrier face. ADAC are trying to use the data from these tests to assess compatibility of the cars involved.

INRETS

Mr Bloch reported that accident analyses were being carried out to study impact speed in accidents with those in co-linear 50 percent overlap car to car crash tests. INRETS are also performing a study of the car fleet in France. They are looking to see how the car fleet is evolving over time. Mr Bloch suggested that others might like to carry out similar studies in their own countries.

UK

Mr Hobbs reported on a series of car to car and car to mobile deformable barrier (MDB) tests. These tests were carried out to study the effects the front structure had on over-riding and structural interaction and to compare tests with both vehicles moving and with only one moving. From the car to car tests it could be seen that some cars controlled over-riding better than others. This was thought to be associated with the extent to which the front structure is tied together vertically. When only one vehicle was moving, more over-riding was observed. There were also differences in the interaction between the car and the ground and in the post impact motion of the vehicles. More research would be necessary to understand more fully the differences between tests with one moving and two moving vehicles.

TRL have carried out a number of side impact tests with different configurations of barrier face on the trolley and with different bullet cars. This work showed that lowering the barrier face to load below the occupant still resulted in significant loading to the lower rib. In such tests, there is more intrusion near the floor and the chest is loaded indirectly but unevenly. When different bullet cars were used it was seen that even where the bullet car was weak, its front was still very much stiffer that the target car's side. Good frontal connections, which help a car to work better in frontal impacts were seen to spread the load better on the car's side and help protect the occupant.

Comparative frontal impacts using a Ford Mondeo showed that a car to car impact at 56 km/h was structurally more demanding than an EEVC ODB test at 64 km/h.

Future tests at TRL will explore the possibilities of assessing or controlling compatibility in a number of ways:

1 Use of a stiff "go/no go" detection layer behind the EEVC face.
2 Limit the maximum force detected on a load cell wall behind the EEVC face. This may be in the form of a force versus car displacement corridor.
3 Limit the variation in force measured at the different load cells. This may be over the whole face or across a horizontal set of load cells.
4 Require upper layers of load cells to register lower loads than layers below them, by an agreed percentage
5 Limit the vehicle acceleration experienced in the ODB test

Japan

Mr Oki reported that no studies were currently being carried out. Japan will decide on its research programme after hearing some of the IHRA discussions.

Scope of Activities

The US needs to consider compatibility in both frontal and side impact and to consider the needs generated by the high sales of Light Trucks and Vans (LTVs). In Europe, there is also a need to consider both frontal and side impact with the additional requirement of giving due consideration to other types of impact. After some discussion, it was agreed that the IHRA group would cover all these aspects.

Definitions

There was some discussion based on a document suggesting some possible definitions, which was produced by Mr Hobbs. It was agreed to amend the document and re-issue it as Document 8. This will be distributed with the minutes.

Involvement of Industry

It was agreed to defer the decision about industry involvement in the IHRA group. It is expected that EEVC WG15 and NHTSA will maintain their own contacts. Japan will invite a representative from JAMA to future meetings.

Chairman's Report

The chairman has to present a report to a meeting to be held in Geneva. He will circulate his draft in advance for members' comments.

SAE Top Tech Meeting

Mr Hollowell is organising an SAE Top Tech Meeting in Detroit on 20 & 21 August 1998. The subject will be Small Cars and Compatibility. He will provide further details to members, when they are available.

Date of Next Meeting

It was agreed that the date of the next meeting would be fixed when details of the next EEVC WG15 meeting were known. It has now be agreed that the next meeting will be held at INSIA in Madrid on 22 January 1998. This will follow the EEVC WG15 meeting on 20 - 21 January 1998.

C A Hobbs
17 December 1997